Volume 4A
LVIA Methodology and Glossary

1.1 Introduction

1.1.1 The Landscape and Visual Impact Assessment (LVIA) identifies, predicts, and evaluates the potential landscape and visual effects that may result from the Project. This assessment assesses the effects of the Project as set out in the Supporting Statement (Document Ref. 43122-WOOD-XX-XX-RP-T-0003_S0_P01.1).

1.1.2 This appendix has been structured as follows:

- Overview of LVA Methodology;
- Data Sources and Site Survey;
- Iterative Design and Assessment;
- Assessing Landscape Effects;
- Assessing Visual Effects;
- Assessing Cumulative Landscape and Visual Effects;
- Evaluation of Significance;
- Nature of Effect;
- Residential Visual Amenity Assessment;
- Glint and Glare;
- Production of ZTVs and Visualisations; and
- Glossary.

1.2 Overview of LVIA Methodology

1.1.1 The LVIA assesses the likely effects of the Proposed Development on the landscape and visual resource, encompassing effects on landscape elements, characteristics and landscape character, designated landscapes, visual effects and cumulative effects.

1.1.2 Essentially, the landscape and visual effects (and whether they are significant) is determined by an assessment of the nature or 'sensitivity' of each receptor or group of receptors and the nature of the effect or 'magnitude of change' that would result from the Project. The evaluation of sensitivity takes account of the value and susceptibility of the receptor to the Project. This is combined with an assessment of the magnitude of change which takes account of the size and scale of the proposed change, the geographical extent and the duration of that change. By combining assessments of sensitivity and magnitude of change, a level of landscape or visual effect can be evaluated and determined. The resulting level of effect is described in terms of whether it is significant or not significant and the type of effect is described as either direct or indirect; temporary or permanent; cumulative; and beneficial, neutral or adverse.

1.1.3 LVA unavoidably involves a combination of both quantitative and subjective assessment and wherever possible a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach.

Technical guidance and best practice

1.1.4 The methodology for the LVIA has been undertaken in accordance with the Landscape Institute and IEMA *Guidelines for Landscape and Visual Impact Assessment*, 3rd Edition (GLVIA3). In addition to planning policy documents and other supporting technical guidance to the LVA methodology includes, but is not limited to the following:

- *Planning Guidance for the Development of Large-Scale Ground Mounted Solar PV Systems*, Building Research Establishment, 2014;
- *An approach to Landscape Character Assessment*, Natural England, October 2014;
- *Visual Representation of Development Proposals*, TGN 06/19, Landscape Institute, September 2019; and
- *Residential Visual Amenity Assessment*, TGN 2/19, Landscape Institute, March 2019.

Defining the LVIA Study Area

1.1.5 It is accepted practice within LVIA work that the extent of the Study Area for a proposed development is broadly defined by the visual envelope of the Site and the anticipated extent of the Zone of Theoretical Visibility (ZTV) arising from the development itself. In this case a study area of 5km (with a detailed study area of 2km) is deemed as being appropriate to cover all potentially material landscape and visual effects. This judgement is based on the understanding of the local landscape character and the scale of the construction and development proposed, as well as a review of study areas used for similar projects.

1.2 Data Sources and Site Surveys

1.2.1 A list of the data sources used for this assessment is provided in the LVIA.

Desk-based and site survey work

1.2.2 The LVIA is informed by desk-based studies and site and field survey work undertaken within the LVIA study area.

1.2.3 A preliminary desk-based assessment was undertaken of landscape and visual receptors using a range of map-based data and related computer and digital analysis including ZTV, digital and/or surface terrain modelling, and wireframe and street view software. This information used to inform initial assessments and focus the site survey work and likely locations for viewpoint photography.

1.2.4 A series of site surveys was undertaken to verify the initial desk-based assessments which may only require simple assessment techniques to complete. This may be due to receptors falling outside the ZTV or confirmation of screening from vegetation and/or built form that means there would be no view of the Proposed Development.

1.2.5 Site and field survey activities include:

- Field survey verification of landscape elements within the Site boundary where the greatest effects are likely;

- Field survey verification of the ZTV from landscape and visual receptor locations and transport and recreational routes through the LVIA study area;
- Micro-siting of viewpoint locations and recording of panoramic baseline photography and subsequent visual assessment from the assessment viewpoints; and
- Field survey assessment and verification of likely landscape, visual and cumulative effects.

1.2.6 The viewpoint photography and visual assessment surveys were undertaken in November 2020, following strict COVID-19 guidelines.

1.2.7 All site survey work was undertaken in fair weather conditions with good to excellent visibility.

1.3 Iterative Design and Assessment

1.3.1 The LVIA is part of an iterative EIA process which aims to 'design out' significant effects via a range of environmental measures including avoidance and design that aim to reduce or eliminate significant effects. Design is an integrated part of the LVIA process and environmental measures related to landscape design and management can be an important tool to mitigate significant effects. The EIA process can also call on a range of environmental and technical specialists that contribute other forms of mitigation that may also bring a range of benefits to the Project. Potentially significant landscape and visual effects and the constraints and opportunities connected with their resolution are identified through the LVIA process.

1.4 Assessing Landscape Effects

1.3.1 Landscape Effects are defined by the Landscape Institute in GLVIA 3, paragraphs 5.1 and 5.2 as follows:

"An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern … is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. … The area of landscape that should be covered in assessing landscape effects should include the site itself and the full extent of the wider landscape around it which the development may influence in a significant manner."

Landscape character

1.4.1 GLVIA 3, paragraph 5.4, advises that Landscape Character Assessment should be regarded as the main source for baseline studies and identifies the following factors which combine to create areas of distinct landscape character:

- *"the elements that make up the landscape in the study area including:*
  - *physical influences – geology, soils, landform, drainage and water bodies;*
  - *landcover, including different types of vegetation and patterns and types of tree cover; and*
  - *the influence of human activity, including land use and management, the character of settlements and buildings, and pattern and type of fields and enclosure.*
  - *The aesthetic and perceptual aspects of the landscape – such as, for example, its scale, complexity, openness, tranquillity or wildness;*

- *The overall character of the landscape in the study area, including any distinctive Landscape Character Types or Areas that can be identified, and the particular combinations of elements and aesthetic and perceptual aspects that make each distinctive, usually by identification as key characteristics of the landscape."*

Landscape effects

1.3.2 The potential landscape effects, occurring during the construction, operation and decommissioning periods of the Project may therefore include, but are not restricted to the following:

- **Changes to landscape elements**: the addition of new elements (such as the Project) or the removal of existing elements such as trees, vegetation and buildings and other characteristic elements or valued features of the landscape character.
- **Changes to landscape qualities**: degradation or erosion of landscape elements and patterns and perceptual characteristics, particularly those that form key characteristic elements of landscape character or contribute to the landscape value.
- **Changes to landscape character**: landscape character may be affected through the incremental effect on characteristic elements, landscape patterns and qualities (including perceptual characteristics) and the addition of new features, the magnitude of which is sufficient to alter the overall landscape character within a particular area.
- **Changes to designated landscapes** that would affect the special landscape qualities underpinning the designation and its integrity.
- **Cumulative landscape effects**: where more than one development of a similar type may lead to a cumulative landscape effect.

1.4.2 Development may have a direct effect on the landscape as well as an indirect effect which would be perceived from the wider landscape, outside the immediate site area and its associated landscape character.

Evaluating Landscape Sensitivity to Change

1.4.3 The assessment of sensitivity takes account of the landscape value and the susceptibility of the receptor to the Project.

1.4.4 Landscape sensitivity often varies in response to both the type and phase of the development proposed and its location, such that landscape sensitivity needs to be considered on a case-by-case basis. It should not be confused with 'inherent sensitivity' where areas of the landscape may be referred to as inherently of 'high' or 'low' sensitivity. For example, a National Park may have inherently high sensitivity on account of its designation and value, although it may prove to be less sensitive or susceptible to a particular development and of variable sensitivity across its geographical area. Alternatively, an undesignated landscape may be of high sensitivity to a particular development regardless of the lack of local or national designation.

Value of the Landscape Receptor

1.4.5 The value of a landscape receptor is a reflection of the value that society attaches to that landscape. The assessment of the landscape value is classified as high, medium, or low and the basis for this assessment is made clear using evidence and professional judgement, based on the following range of factors:

- **Landscape designations:** A receptor that lies within the boundary of a recognised landscape related planning designation will be of increased value, depending on the proportion of the

receptor that is affected and the level of importance of the designation which may be international, national, regional, or local. The absence of designation does not however preclude value, as an undesignated landscape receptor may be valued as a resource in the local or immediate environment.

- **Landscape quality:** The quality of a landscape receptor reflects its attributes, such as scenic quality, sense of place, rarity and representativeness, and the extent to which its valued attributes have remained intact. A landscape with consistent, intact, well-defined, and distinctive attributes is considered to be of higher quality and, in turn, higher value, than a landscape where the introduction of elements has detracted from its character.
- **Landscape experience:** The experiential qualities that can be evoked by a landscape receptor can add to its value. These responses relate to several factors including cultural associations that may exist in art, literature or history; the recreational value of the landscape, or the iconic status of the landscape in its own right; and its contribution of other values such as nature conservation or archaeology.

Landscape Susceptibility to Change

1.4.6 The susceptibility of a landscape receptor to change is a reflection of its ability to accommodate the changes that will occur as a result of the Project without undue consequences for the maintenance of the baseline situation and/or the achievement of landscape planning policies and strategies. Some landscape receptors are better able to accommodate development than others due to certain characteristics that are indicative of capacity to accommodate change. These characteristics may or not also be special landscape qualities that underpin designated landscapes.

1.4.7 The assessment of the susceptibility of the landscape receptor to change is classified as high, medium or low and the basis for this assessment is made clear using evidence and professional judgement. Indicators of landscape susceptibility to the type of development proposed are based on the following criteria:

- **Overall Strength and Robustness:** Collectively the overall characteristics and qualities of a particular landscape result in a strong and robust landscape that is capable of reasonably accommodating a development without undue adverse effects on the special landscape qualities (in the case of a designated landscape), or the key characteristics for which an area of landscape character or a particular element it is valued.
- **Landscape Scale and Topography:** The scale and topography are large enough to physically accommodate the development footprint without the requirement of invasive earthworks or drainage. Topographical features such as narrow valleys or more complex and small-scale landforms such as drumlins, incised river valleys/gorges, cliffs or rock outcrops are likely to be more susceptible to this type of development than broad, homogenous topography.
- **Openness** in the landscape may increase susceptibility to change because it can result in wider visibility of a development, however open landscape may also be larger in scale and simple, which would decrease susceptibility. Conversely enclosed landscapes can offer more screening potential, limiting visibility to a smaller area, however they may also be smaller scale and more complex which would increase susceptibility.
- **Land Cover Pattern:** Ancient and mature or long-established vegetation such as mature trees, woodland and protected hedgerows are likely to be more susceptible to a development, particularly where these elements form part of a valued characteristic landscape pattern or feature. Conversely grassland/or forestry are likely to be less susceptible to a development.
- **Skyline:** Prominent and distinctive skylines and horizons with important landmark features that are identified in the landscape character assessment, are generally considered to be more

susceptible to a development in comparison to broad, simple skylines which lack landmark features or contain other infrastructure features.

- **Relationship with other Development and Landmarks:** Contemporary landscapes where there are existing similar developments or other forms of development (industry, mineral extraction or electrical grid connections) that already have a characterising influence result in a lower susceptible to development in comparison to areas characterised by smaller scale, historic development and landmarks (historic villages with dense settlement patterns and associated buildings such as church towers).
- **Rationale:** Some site locations have an obvious visual rationale for development in terms of the available space, access, simplicity, and relationship to other similar forms of development. Conversely a site may appear overly constrained and require greater engineering or additional construction activity to accommodate a development with lower design quality and few embedded environmental measures.
- **Remoteness, Naturalness, Wildness / Tranquillity**: Notably landscapes that are acknowledged to be particularly scenic, wild or tranquil are generally considered to be more susceptible to development in comparison to ordinary, cultivated or forested / developed landscapes where perceptions of 'wildness' are less tangible. Landscapes which are either remote or appear natural may vary in their susceptibility to development.
- **Landscape Context and Adjacent Landscapes:** The extent to which a development will influence landscape receptors across the study area relates to the associations that exist between the landscape receptor within which a development is located and the landscape receptor from which a development is being experienced. In some situations, this association will be strong, where the landscapes are directly related. For example, adjacent areas of landscape character may share or 'borrow' a high number of common characteristics. Landscape elements may be linked to or associated with wider landscape patterns such as individual trees forming part of an avenue or pattern of woodland copses, for example. In other situations, the association between adjacent landscapes will be weak. The context and visual connection to areas of adjacent landscape character or designations has a bearing on the susceptibility to development.

Landscape Sensitivity Rating

1.4.8 An overall sensitivity assessment of the landscape receptor is made by combining the assessment of the value of the landscape character receptor and its susceptibility to change. The evaluation of landscape sensitivity is described as 'High', 'Medium' or 'Low' and is drawn from the consideration of a range of criteria that indicate landscape value and susceptibility. The basis for the assessment is made clear using evidence and professional judgement in the evaluation of sensitivity for each receptor.

1.4.9 Criteria that tend towards higher or lower sensitivity are set out in **Table 1**.

Table 1 Landscape Sensitivity to Change

Value / Susceptibility criteria	Level of value / susceptibility ranging from 'High' to 'Medium' to 'Low' High Medium Low	
Value – Landscape Value is determined by consideration a range of indicators / criteria with examples as follows:		
Designation	Designated landscapes/elements with national policy level protection or defined for their natural beauty. Evidence that the landscape/element is valued or used substantially for recreational activity.	Landscapes without formal designation. Despoiled or degraded landscape with little or no evidence of being valued by the community. Elements that are uncharacteristic such as non-natives or self-seeded vegetation that may need to be cleared.
Quality	Higher quality landscapes/elements with consistent, intact, and well-defined, distinctive attributes.	Lower quality and indistinct landscapes/elements or features that detract from its inherent attributes.
Rarity	Rare or unique landscape character types, features or elements.	Widespread or 'common' landscape character types, features or elements.
Aesthetic / scenic	Aesthetic/scenic or perceptual aspects of designated wildlife, ecological or cultural heritage features that contribute to landscape character.	Limited wildlife, ecological or cultural heritage features, or limited contribution to landscape character.
Perceptual qualities	Landscape with perceptual qualities of wildness, remoteness, or tranquillity.	Limited or no evidence that the landscape is used for recreational activity.
Cultural associations	Landscape with strong cultural associations that contributes to scenic quality.	Landscape with few cultural associations.
Susceptibility – Landscape Susceptibility is determined by consideration a range of indicators / criteria with examples as follows:		
Strength and robustness	Fragile landscape vulnerable and lacking the ability to accommodate change.	Robust landscape, able to accommodate change or loss of features without undue adverse effects.
Landscape Scale	A landscape of a suitably large enough scale to accommodate the development.	A smaller scale landscape that may require further engineering to accommodate the development.
Openness / Enclosure	An open landscape with limited screening and higher susceptibility to the Proposed Development.	An enclosed landscape with screening and lower susceptibility to the Proposed Development.
Reinstatement	Lower value, non-characteristic landcover and elements capable of rapid reinstatement.	Higher value, characteristic landcover and elements that cannot be easily reinstated or replaced.
Skyline	Distinctive undeveloped skylines with landmark features.	Developed, nondistinctive skylines.
Association	Weak and indirect association. Other development may be of a smaller scale or historic.	Strong or direct association other similar contemporary developments/landscape character.
Rationale	Strong landscape rationale and opportunity with high degree of design quality and/or environmental measures.	Landscape with numerous environmental and technical constraints and fewer environmental measures.
Perceptual Qualities	Perceptual qualities associated with particular scenic qualities, wildness or tranquillity.	Contemporary, cultivated/settled or developed landscapes are likely to have a lower susceptibility.
Landscape Context	Adjacent landscape character context connected by borrowed character and views.	Host landscape character is separate from surrounding/adjacent landscape character

Sensitivity	**Sensitivity drawn from consideration of the above Value and Susceptibility criteria with the final conclusion on the level of Sensitivity ranging from 'High' to 'Medium' to 'Low'.**

Landscape Magnitude of Change

1.4.10 The magnitude of change affecting landscape receptors is an expression of the scale of change that would result from the Project. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects.

Size or Scale of Change

1.4.11 This criterion relates to the size or scale of change to the landscape that would arise as a result of the Project, based on the following factors:

- **Landscape Elements**: The degree to which the landscape elements or pattern of elements that makes up the landscape character would be altered by the Project, through the loss, alteration, or addition of elements in the landscape. The magnitude of change would generally be higher if the features that make up the landscape character are extensively removed or altered, and/or if many new components are added to the landscape.
- **Landscape Characteristics**: The extent to which the effect of the Project change, (physically or perceptually) the key characteristics of the landscape which may be important to its distinctive character. This may include, for example, the scale of the landform, its relative simplicity, complexity or irregularity, seasonal changes, the nature of the landscape context, the grain or orientation of the landscape, the degree to which the receptor is influenced by external features and the juxtaposition of the Proposed Development in relation to these key characteristics.
- **Landscape Character / Designation**: The degree to which landscape character receptors would be changed by the addition of the Project. If the Project is located in a landscape receptor that has similar development / activities present within its character, this may for example reduce the magnitude of change if there is a high level of integration and the developments form a unified and cohesive feature in the landscape. In the case of designated landscapes, the degree of change is considered in light of the effects on the special landscape qualities which underpin the designation and the effect on the integrity of the designation.

  All landscapes change over time and much of that change is managed or planned or maybe seasonal / natural. Often landscapes will have management objectives for 'protection' or 'accommodation' of development. The scale of change may be localised, or occurring over parts of an area, or more widespread affecting whole landscape character areas and their overall integrity. Developmental change may be time limited or permanent.
- **Distance**: The size and scale of change is also strongly influenced by the proximity of the Project to the receptor and the extent to which the development can be seen as a characterising influence on the landscape. Consequently, the scale or magnitude of change is likely to be lower in respect of landscape receptors that are distant from the Project and/or screened by intervening landform, vegetation and built form to the extent that the scale of their influence on landscape receptors is small or limited. Conversely, landscapes closest to the Project are likely to be most affected. Host landscapes (where the development is located within a 'host' landscape character unit) would be directly affected whilst adjacent areas of landscape character would be indirectly affected.

Geographical Extent

1.4.12 Landscape effects are described in terms of the geographical extent or physical area that would be affected (described as a linear or area measurement which could also be described as local, medium or large scale). This should not be confused with the scale of the development or its physical footprint. The way the geographical extent of the landscape effect is described for different landscape receptors is explained as follows:

- **Landscape Elements**: The geographical extent of landscape elements may be objectively measured in terms of numbers, area, or linear measurement. For example, the number of trees, area of woodland/or length of hedgerow affected may be recorded.
- **Landscape Character / Characteristics**: The extent of the effects on landscape character will vary depending on the specific nature of the Project. This is not simply an expression of visibility or the extent of the ZTV. It is a specific assessment of the extent of landscape character that would be changed by the Project in terms of its character, key characteristics, and elements. The geographical extent may be described as local (within the local vicinity of the Project or field unit within which it is located) medium, or large / wide scale (affecting areas beyond the local vicinity or field unit).
- **Landscape Designations**: In the case of a designated landscape, this refers to the extent the special landscape qualities of the designation are affected and whether this can be defined in terms of area or linear measurements, or subjectively (with the support of panel and/or peer review) and whether the integrity of the designation is affected. As with the landscape character the geographical extent may be described as local (within the local vicinity of the Project or field unit within which it is located) medium, or large / wide scale (affecting areas beyond the local vicinity or field unit).

Duration and Reversibility

1.4.13 The duration or period over which a landscape effect is effect is likely to occur is judged on a scale of 'short', 'medium' or 'long' term and is assessed for the Project as follows:

- Long-term – more than 10 years.
- Medium-term – 6 to 10 years.
- Short-term – 1 to 5 years.

1.4.14 In addition, the nature or type of effect may also be described as temporary or permanent.

1.4.15 Reversibility is a separate, but linked consideration concerning the prospects and practicality of a particular effect being reversed. Some forms of development, such as housing can be considered as permanent, whereas other forms of development such as wind farms can be considered as reversable because they have a limited operational life and after their removal the land would be restored. Mineral workings for example may be partially reversible with the landscape restored, although not completed the same as the original.

Landscape Magnitude of Change Rating

1.4.16 The 'magnitude' or 'degree of change' resulting from the Project is described as 'High', 'Medium', 'Low', 'Negligible' or 'Zero'. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects (i.e. as short / medium / long-term and temporary or permanent). The basis for the assessment of magnitude for each receptor is made clear using evidence and professional judgement.

1.4.17 The levels of magnitude of change that can occur are defined in **Table 2**.

Table 2 Landscape Magnitude of Change Ratings

Magnitude of landscape change	Examples of Landscape Magnitude
High	Size / Scale: A large-scale change and major loss of key landscape elements / characteristics or the addition of large scale or numerous new and uncharacteristic features or elements that would affect the landscape character and the special landscape qualities / integrity of a landscape designation. Directly affecting a host landscape receptor or indirectly affecting a nearby receptor. Geographical extent: The size or scale of change would typically, but not always affect a large geographical extent or area and may be close to the Proposed Development.
High-medium	Intermediate rating with combination of criteria from high or medium magnitude.
Medium	Size / Scale: A medium scale change and moderate loss of some key landscape elements / characteristics or the addition of some new medium scale uncharacteristic features or elements that could partially affect the landscape character and the special landscape qualities / integrity of a landscape designation. Directly affecting a host landscape receptor or indirectly affecting a nearby receptor. Geographical extent: The size or scale of landscape change would typically, but not always affect a more localised geographical extent at an intermediate distance from the Project.
Medium-low	Intermediate rating with combination of criteria from medium or low magnitude.
Low	Size / Scale: A small-scale change and minor loss of a few landscape elements / non key characteristics, or the addition of some new small-scale features or elements of limited characterising influence on landscape character / designations. Geographical extent: There may be a small partial change in landscape character, typically, but not always affecting a localised geographical extent at some distance from the Project.
Negligible	Size / Scale: A very small-scale change that may include the loss or addition of some landscape elements of limited characterising influence. The landscape characteristics and character would be unaffected. Geographical extent: Typically affecting a very small geographical extent at greater distance from the Project.

Evaluating landscape effects and significance

1.4.18 The level of landscape effect is evaluated through the combination of landscape sensitivity and magnitude of change. Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix in **Table 5,** which is used to guide the assessment. The factors considered in the evaluation of the sensitivity and the magnitude of the change resulting from the Project and their conclusion, will be presented in a comprehensive, clear and transparent manner.

1.4.19 Further information is also provided about the nature of the effects.

Significant Landscape Effects

1.4.20 A significant effect would occur where the combination of the variables results in the Project having a defining effect on the landscape receptor, or where changes of a lower magnitude affect a landscape receptor that is of particularly high sensitivity. A major loss or irreversible effect over an extensive area or landscape character, affecting landscape elements, characteristics and / or perceptual aspects that are key to a nationally valued landscape are likely to be significant.

Non-Significant Landscape Effects

1.4.21 A non-significant effect would occur where the effect of the Project is not defining, and the landscape character of the receptor continues to be characterised principally by its baseline characteristics. Equally a small-scale change experienced by a receptor of high sensitivity may not significantly affect the special landscape quality or integrity of a designation. Reversible effects, on elements, characteristics and character that are of small-scale or affecting lower value receptors are unlikely to be significant.

1.5 Assessing Visual Effects

1.5.1 Visual Effects are concerned wholly with the effect of the development on views, and the general visual amenity and are defined by the Landscape Institute in GLVIA 3, paragraphs 6.1 as follows:

"An assessment of visual effects deals with the effects of change and development on views available to people and their visual amenity. The concern … is with assessing how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views."

1.5.2 Visual effects are identified for different receptors (people) who would experience the view at their place of residence, within their community, during recreational activities, at work, or when travelling through the area. The visual effects may include the following:

- Visual effect: a change to an existing static view, sequential views, or wider visual amenity as a result of development or the loss of particular landscape elements or features already present in the view; and
- Cumulative visual effects: the cumulative or incremental visibility of similar types of development may combine to have a cumulative visual effect.

1.5.3 The level of visual effect (and whether this is significant) is determined through consideration of the sensitivity of each visual receptor (or range of sensitivities for receptor groups) and the magnitude of change that would be brought about by the construction, operation and decommissioning of the Project.

Zone of Theoretical Visibility (ZTV)

1.5.4 The ZTV (**Figure 7.2**) is used to analyse the extent of theoretical visibility of the Project across the LVIA Study Area and to assist with viewpoint selection. The ZTV plan does not however, take account of the screening effects of buildings, localised landform, or vegetation, unless specifically noted. As a result, there may be roads, tracks, and footpaths within the study area which, although shown as falling within the ZTV, are screened or filtered by built form and vegetation, which would otherwise preclude visibility.

1.5.5 The ZTV provides a starting point in the assessment process and accordingly tends towards the greatest calculation of the theoretical visibility.

Viewpoint Analysis

1.5.6 Viewpoint analysis is used to assist the assessment and is conducted from selected viewpoints within the LVIA Study Area. The purpose of this is to assess both the level of visual effect for particular receptors and to help guide the design process and focus the assessment. A range of viewpoints are examined in detail and analysed to determine whether a significant visual effect would occur. By arranging the viewpoints in order of distance it is possible to define a threshold or outer geographical limit, beyond which significant effects would be unlikely.

1.5.7 The assessment involves visiting the viewpoint location and viewing wirelines and photomontages prepared for each viewpoint location. The fieldwork is conducted in periods of fine weather with good visibility and considers seasonal changes such as reduced leaf cover or hedgerow maintenance.

1.5.8 The LVIA therefore includes viewpoint analysis prepared for each viewpoint. A summary table of the findings is also provided in order of distance from the Site. This summary table assists in defining the direction, elevation, geographical spread and nature of the potential visual effects and identify areas where the greatest effects are likely to occur. This approach seeks to provide clarity and confidence to consultees and decision makers by allowing the detailed judgements on the magnitude of visual change to be more readily scrutinised and understood.

1.5.9 The viewpoint analysis is used to assist the visual assessment of visual receptor locations reported in **Volume 2, Chapter 7** of the EIA Report.

Evaluating Visual Sensitivity to Change

1.5.10 In accordance with paragraphs 6.31-6.37 of GLVIA 3, the sensitivity of visual receptors is determined by a combination of the value of the view and the susceptibility of the visual receptors to the change likely to result from the Project on the view and visual amenity.

View/Visual Amenity Value

1.5.11 The value of a view or series of views reflects the recognition and importance attached either formally through identification on mapping or being subject to planning designations, or informally through the value which society attaches to the view(s). The value of a view is classified as high, medium, or low and the basis for this assessment is made clear using evidence and professional judgement, based on the following criteria:

- **Formal recognition**: The value of views can be formally recognised through their identification on OS or tourist maps as formal viewpoints, sign-posted and with facilities provided to add to the enjoyment of the viewpoint such as parking, seating, and interpretation boards. Specific views may be afforded protection in local planning policy and recognised as valued views. Specific views can also be cited as being of importance in relation to landscape or heritage planning designations, for example the value of a view would be increased if it presents an important vista from a designed landscape or lies within or overlooks a designated area, which implies a greater value to the visible landscape.
- **Informal recognition**: Views that are well-known at a local level and/or which have particular scenic qualities can have an increased value, even if there is no formal recognition or designation. Views or viewpoints are sometimes informally recognised through references in art or literature and this can also add to their value. A viewpoint that is visited and appreciated by a large number of people would generally have greater importance than one gained by very few people.

Susceptibility to Change

1.5.12 Susceptibility relates to the nature of the viewer experiencing the view and how susceptible they are to the potential effects of the Project. A judgement to determine the level of susceptibility therefore relates to the nature of the viewer and their experience from that particular viewpoint or series of viewpoints, classified as high, medium or low and based on the following criteria:

- **Nature of the viewer**: The nature of the viewer is defined by the occupation or activity of the viewer at the viewpoint or series of viewpoints. The most common groups of viewers considered in the visual assessment include residents, motorists, and people taking part in recreational activity or working. Viewers, whose attention is focused on the landscape, or with static long-term views, are likely to have a higher sensitivity. Viewers travelling in cars or on trains would tend to have a lower sensitivity as their view is transient and moving. The least sensitive viewers are usually people at their place of work as they are generally less sensitive to changes in views.
- **Experience of the viewer**: The experience of the visual receptor relates to the extent to which the viewer's attention or interest may be focused on the view and the visual amenity they experience at a particular location. The susceptibility of the viewer to change arising from the Proposed Development may be influenced by the viewer's attention or interest in the view, which may be focused in a particular direction, from a static or transitory position, over a long or short duration, and with high or low clarity. For example, if the principal outlook from a settlement is aligned directly towards the Proposed Development, the experience of the visual receptor would be altered more notably than if the experience relates to a glimpsed view seen at an oblique angle from a car travelling at high speed. The visual amenity experienced by the viewer varies depending on the presence and relationship of visible elements, features or patterns experienced in the view and the degree to which the landscape in the view may accommodate the influence of the Proposed Development.

Visual Sensitivity Rating

1.5.13 An overall level of sensitivity is applied for each visual receptor or view, classified as 'High', 'Medium' or 'Low' by combining individual assessments of the value of the view and the susceptibility of the visual receptor to change. Each visual receptor, meaning the particular person or group of people likely to be affected at a specific viewpoint, is assessed in terms of their sensitivity. The basis for the assessments is made clear using evidence and professional judgement in the evaluation of each receptor. Criteria that tend towards higher or lower sensitivity are set out in **Table 3**.

Table 3 Visual Sensitivity to Change

Value / Susceptibility criteria	**Level of value / susceptibility ranging from 'High' to 'Medium' to 'Low'** **High Medium Low**	
Value – is determined by consideration a range of indicators / criteria with examples as follows:		
Map / tourist information	Specific viewpoint identified in OS maps and/or tourist information and signage.	Viewpoint not identified in OS maps or tourist information and signage.
Facilities	Facilities provided at viewpoint to aid the enjoyment of the view.	No facilities provided at viewpoint to aid enjoyment of the view.
Planning recognition	View afforded protection in planning policy.	View is not afforded protection in planning policy.

Value / Susceptibility criteria	Level of value / susceptibility ranging from 'High' to 'Medium' to 'Low' High ⟷ Medium ⟷ Low	
Landscape value	View is within or overlooks a designated landscape, which implies a higher value to the visible landscape.	View is not within, nor does it overlook, a designated landscape.
Recognition	View has informal recognition and well- known at a local level, as having particular scenic qualities.	View has no informal recognition and is not known as having particular scenic qualities.
Art / Literature	View or viewpoint is recognised through references in art or literature.	View or viewpoint is not recognised in references in art or literature.
Scenic Quality	View has high scenic qualities relating to the content and composition of the visible landscape.	View has low scenic qualities relating to the content and composition of the visible landscape.
Susceptibility – is determined by consideration a range of indicators / criteria with examples as follows:		
Activity of the viewer	Viewer who is likely or liable to be influenced by the Project such as residents, walkers, or tourists, whose main attention and interest may be on their surroundings.	Viewer who is un or less likely to be influenced by the Project such as viewers whose attention is not focused on their surroundings, e.g. people at work, or team sports.
Nature of the View	Residents that gain static, long-term views of the development in their principal outlook.	Mobile viewers whose views are transient and dynamic, e.g. travelling in cars or on trains with glimpsed views.
Numbers of Viewers	Viewpoint is visited or used by a large number of people.	View is visited or gained by relatively very few people. An exception may be wild land.
Direction / Field of View	A view that is focused in a specific directional vista, with notable features of interest in a particular part of the view.	Open views with no specific point of interest.
	Viewers are focused on the experience of a high level of visual amenity at the location due to its overall pleasantness as an attractive visual setting or backdrop to activities.	The visual amenity experienced at the location by viewers is less pleasant or attractive than might otherwise be the case.
Sensitivity	**Sensitivity drawn from consideration of the above Value and Susceptibility criteria with the final conclusion on the level of Sensitivity ranging from 'High' to 'Medium' to 'Low'.**	

Visual Magnitude of Change

1.5.14 The visual magnitude of change is an expression of the scale of change that would result from the visibility of the Project. In assessing the magnitude of change, the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects.

Size or Scale of Change

1.5.15 An assessment is made of the size or scale of change in the view that is likely to be experienced as a result of the Project, based on the following criteria:

- **Distance**: The distance between the visual receptor/viewpoint and the Project. Generally, the greater the distance, the lower the magnitude of change, as the Project would constitute a smaller portion of the view.

- **Size**: The amount and size of the Project that would be seen. Visibility may range from a small or partial to whole visibility of the Project. Generally, the larger and more elements of the Project that appear in the view, the higher the magnitude of change.

  This is also related to the degree to which development may be wholly or partly screened by landform, vegetation (seasonal) and/or built form. Conversely open views are likely to reveal more of a development, particularly where this is a key characteristic of the landscape.

- **Scale**: The scale of the change in the view, with respect to the loss or addition of features in the view and changes in its composition. The scale of the Project may appear larger or smaller relative to the scale of the receiving landscape.

- **Field of View** The vertical/horizontal Field of View (FoV) and the proportion of view that is affected by the Project. Generally, the more of the proportion of a view that is affected, the higher the magnitude of change would be. If the Project extended across the whole of the open outlook, the magnitude of change would be higher as the full view would be affected. Conversely, if the development extended over a narrow part of an open view, the magnitude of change is likely to be smaller. This can in part be described objectively by reference to the FoV affected, relative to the extent and proportion of the available view.

- **Contrast**: The character and context within which the Project would be seen and the degree of contrast or integration of any new features with existing landscape elements, in terms of scale, form, mass, line, height, colour, luminance, and motion. Developments which contrast or appear incongruous in terms of colour, scale, and form are likely to be more visible and have a higher magnitude of change.

- **Consistency of image**: The consistency of image of the Project in relation to other developments. The magnitude of change for the Project is likely to be lower if it appears broadly similar to other developments in the landscape in terms of its scale, form, and general appearance.

- **Skyline/Background**: Whether the Project would be viewed against the skyline or a background landscape may affect the level of contrast and magnitude. For example, skyline developments may appear more noticeable, particularly where they affect open and uninterrupted or undeveloped horizons. Conversely, development may also appear more noticeable when viewed against a darker background landscape, such as forestry. In these cases, the magnitude of change would tend to be higher.

  If the Project adds to an already developed skyline the magnitude of change would tend to be lower.

- **Number**: Generally, the greater the number of separate development components seen simultaneously or sequentially, the higher the magnitude of change. Further cumulative effects would occur in the case of separate, existing developments and their spatial relationship to each other, which would affect the magnitude of change. For example, development that appears as an extension to an existing development would tend to result in a lower magnitude of change than a separate, new development.

- **Nature of Visibility**: The Project may be subject to various phases of development change, and the manner in which the development may be viewed could be intermittent, continuous, or seasonal, due to periodic management or leaf fall.

Geographical Extent

1.5.16 The geographic extent over which the visual effects would be experienced is also assessed. This is distinct from the size or scale of effect and is described in terms of the physical area or location

over which it would be experienced. The extent of the effects would vary according to the specific nature of the Project and is principally assessed through ZTV, field survey, and viewpoint analysis of the extent of visibility likely to be experienced by visual receptors. The geographical extent of visual effects can be described as per the following examples:

- Effects on receptors within a particular area can be illustrated via a representative viewpoint that reflects a visual effect similar to that likely to be experienced by receptors within that area. The geographical extent of that visual effect can be expressed in units of area or as a percentage of the total area.
- Effects on people travelling on a route through the landscape can also be illustrated via a representative viewpoint relative to the linear route, with the geographical extent of that visual effect expressed in units of length or as a percentage of the total length.
- The geographical extent of a visual effect experienced from a specific viewpoint may be limited to that location alone. (An example of a 'specific viewpoint' is a public viewpoint recommended in tourist literature such as a well visited hill summit. An example of an 'illustrative viewpoint' is a particular location within a built up or well vegetated area where an uncharacteristically open view exists).

Duration and Reversibility

1.5.17 The duration or time period over which a visual effect is likely to occur is judged on a scale of 'short', 'medium' or 'long' term and is assessed for this Project as per the method set out in paragraph 1.5.13 above.

1.5.18 Reversibility is a separate, but linked consideration, also assessed for this Project as per the method set out in paragraph 1.5.15 above.

Visual Magnitude of Change Rating

1.5.19 The magnitude' or 'degree of change resulting from the Project is quantified as High, Medium, Low, Negligible, or Zero. In assessing the magnitude of change the assessment has focused on the size or scale of change and its geographical extent. The duration and reversibility are stated separately in relation to the assessed effects. The basis for the assessment of magnitude for each receptor is made clear using evidence and professional judgement, and some examples of the levels of magnitude of change that can occur on views are defined in **Table 4**.

Table 4 Visual Magnitude of Change

Magnitude of landscape change	Examples of Visual Magnitude
High	• Size and Scale: A very large - large and dominant change to the view. • Number: Involving the loss/addition of a large number of features / elements. • Distance: Typically appearing closer to the viewer in the fore to middle ground. • FoV: Affecting a large vertical and wide horizontal FoV. • Nature of Visibility: Multiple phase development, continuously and sequentially visible. • Contrast: Strong degree of contrast with surroundings with little or no screening. • Skyline: Visible on the skyline as a new feature. • Consistency of Image: Contrasting with other developments, lacking in visual rationale. Typically experienced from representative viewpoints illustrating a visual effect likely to be experienced by larger numbers of people, relative to the activity, affecting a large area or length / proportion of route. May also be experienced from a specific viewpoint.

Magnitude of landscape change	Examples of Visual Magnitude
High - medium	Intermediate rating with combination of criteria from high or medium magnitude of change category.
Medium	• Size and Scale: A medium and prominent change to the view. • Number: Involving the loss/addition of a number of features / elements. • Distance: Typically appearing in the middle ground. • FoV: Affecting a medium vertical and a medium horizontal FoV. • Nature of Visibility: Multiple phase development, intermittently and sequentially visible. • Contrast: Contrast with surroundings and may benefit from some screening. • Skyline: Visible on the skyline along with other features. • Consistency of Image: Different from other developments, some visual rationale. Typically experienced from representative viewpoints illustrating a visual effect likely to be experienced by a medium number of people, relative to the activity, affecting a medium area or length / proportion of route. May also be experienced from a specific viewpoint.
Medium-low	Intermediate rating with combination of criteria from medium or low magnitude of change category.
Low	• Size and Scale: A small and noticeable change, could being missed by the casual observer. • Number: Involving the loss/addition of a small number of features / elements. • Distance: Typically appearing in the background. • FoV: Affecting a small vertical and a narrow horizontal FoV. • Nature of Visibility: Simple, single development, intermittently and infrequently visible. • Contrast: Some parity / 'fits' with surroundings and may benefit from screening. • Skyline: Partly visible on a developed skyline or not visible on the skyline. • Consistency of Image: Similar from other developments with visual rationale, appearing reasonably well accommodated within its surroundings. Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.
Negligible - Zero	• Size and Scale: A small or negligible change, need to 'look for it'. • Number: Involving the loss/addition of a small number of features / elements. • Distance: Typically appearing in the far distance. • FoV: Affecting a small vertical and a very narrow horizontal FoV. • Nature of Visibility: Simple, single development, intermittently and infrequently visible. • Contrast: Blends with surroundings and / or is well screened. • Skyline: Partly visible on a developed skyline or not visible on the skyline. • Consistency of Image: Similar from other developments with strong visual rationale, appearing well accommodated within its surroundings. Typically experienced from illustrative viewpoints likely to be experienced by low numbers of people, relative to the activity, affecting a smaller area or length / proportion of route. May also be experienced from a specific viewpoint.

Evaluating visual effects and significance

1.5.20 The level of visual effect is evaluated through the combination of visual sensitivity and magnitude of change. Once the level of effect has been assessed, a judgement is then made as to whether the level of effect is 'significant' or 'not significant' as required by the relevant EIA Regulations. This process is assisted by the matrix in **Table 5** which is used to guide the assessment. The factors considered in the evaluation of the sensitivity and the magnitude of the change resulting from the Project and their conclusion, is presented in a comprehensive, clear and transparent manner.

1.5.21 Further information is also provided about the nature of the effects.

Significant Visual Effects

1.5.22 A significant effect is more likely to occur where a combination of the variables results in the Project having a defining effect on the view or visual amenity or where changes affect a visual receptor that is of high sensitivity.

Non-Significant Visual Effects

1.5.23 A non-significant effect is more likely to occur where a combination of the variables results in the Project having a non-defining effect on the view or visual amenity or where changes affect a visual receptor that is of low sensitivity.

Weather conditions

1.5.24 The assessment of visual effects is undertaken in clear weather with good to excellent visibility. This means that the viewpoint assessment represents a maximum or fair assessment of the likely visual effects. The same viewpoint may be experienced under less optimal viewing conditions resulting in a significant effect appearing as non-significant, due to the change in the variable weather conditions. Due to the conditions of the assessment the reverse (a non-significant effect appearing as significant) is unlikely to occur.

1.6 Assessing Cumulative Landscape and Visual Effects

1.5.1 There are no similar developments (solar farms, hydrogen or battery storage facilities) within the 5km study area. A cumulative assessment is therefore scoped out. Other forms of development including windfarms, pylons, and other industry are considered as part of the landscape and visual baseline in the LVIA.

1.7 Evaluation of Significance

1.7.1 The matrix presented in **Table 5** is used as a guide to illustrate the LVIA process. In line with the emphasis placed in GLVIA3 upon the application of professional judgement, an overly mechanistic reliance upon a matrix is avoided through the provision of clear and accessible narrative explanations of the rationale underlying the assessment made for each landscape and visual receptor. Such narrative assessments provide a level of detail over and above the outline assessment provided by use of the matrix alone.

1.7.2 The landscape and visual assessment unavoidably, involves a combination of quantitative and qualitative assessment and wherever possible cross references will be made to objective evidence, baseline figures and / or to photomontage visualisations to support the assessment conclusions. Often a consensus of professional opinion has been sought through consultation, internal peer review, and the adoption of a systematic, impartial, and professional approach. Importantly each effect results from its own unique set of circumstances and have been assessed on a case by case basis. The matrix as presented in **Table 5** should therefore be considered as a guide and any deviation from this guide will be clearly explained in the assessment.

1.7.3 Significant landscape and visual effects are highlighted in bold in **Table 5**. They relate to all those effects that result in a '**Major**' or a '**Major / Moderate**' level of effect. In some circumstances, '**Moderate**' levels of effect (indicated in italics) also have the potential, subject to the assessor's opinion, to be considered as significant and these exceptions are also highlighted in bold in the text and will be explained as part of the assessment, where they occur. White or un-shaded boxes in **Table 5** indicate a non-significant effect.

1.7.4 In those instances where there would be no effect, the magnitude has been recorded as 'Zero' and the level of effect as 'None'.

Table 5 Evaluation of Landscape and Visual Effects

		Landscape and Visual Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change	**High**	**Major**	**Major / Moderate**	*Moderate*	Slight
	Medium	**Major / Moderate**	*Moderate*	Slight	Slight / Negligible
	Low	*Moderate*	Slight	Slight / Negligible	Negligible
	Negligible	Slight	Slight / Negligible	Negligible	Negligible
	Zero	None / No View			

Type or Nature of Effect

1.7.5 The type or nature of effect is also described in terms of whether it is direct or indirect; its duration; whether the effects are cumulative; and whether the effect is beneficial, neutral or adverse.

Direct and Indirect effects

1.7.6 Direct landscape effects relate to the host landscape and concern both physical and perceptual effects on the receptor.

1.7.7 Indirect landscape effects relate to those landscapes and receptors which separated by distance or remote from the development and therefore are only affected in terms of perceptual effects. The Landscape Institute also defines indirect effects as those which are not a direct result of the development but are often produced away from it or as a result of a complex pathway.

1.7.8 Visual effects are generally all considered as direct effects. An indirect visual effect may however be used to define a visual effect on a view that is not in the direction of the main view of the viewer as described by the following examples:

- Road users generally face the road directly ahead in the direction of travel and visual effects affecting those views may be described as direct effects. Where the visual effect is experienced in views oblique to the direction of travel they may be described as indirect.
- Designed landscapes and vistas/viewpoints may be orientated in a particular direction, and visual effects affecting those views may be described as direct effects. Where the visual effect is experienced in views oblique to the direction of the designed or main view they may be described as indirect.

1.7.9 Secondary effects (or effects after an initial effect) are considered in this assessment as indirect effects.

Beneficial and Adverse Effects

1.7.10 The LVA is not an assessment of public opinion, although a precautionary approach has been taken which assumes that the nature of the effects would be adverse or neutral unless otherwise stated.

1.7.11 Guidance provided by the in GLVIA3 on the nature of effect states that "*in the LVA, thought must be given to whether the landscape and visual effects are judged to be positive (beneficial) or negative*

(adverse) in their consequences for landscape or for views and visual amenity", but it does not provide guidance as to how that may be established in practice. The nature of effect is therefore one that requires interpretation and, where applied, this involves reasoned professional opinion.

1.7.12 In relation to many forms of development, the LVIA will identify beneficial, neutral, and adverse effects by assessing these under the term 'Nature of Effect'. The landscape and visual effects of large-scale infrastructure are difficult to categorise in either of these brackets as, unlike other disciplines, there are no definitive criteria by which the effects can be measured as being categorically beneficial or adverse. Therefore, the approach taken combines qualitative and quantitative assessment where possible.

1.7.13 As a starting point, unless stated otherwise, the effects assessed in the LVIA are considered to be adverse. This may alter subject to mitigation proposals which are adopted as part of the Project. Beneficial or neutral effects may arise in certain situations and are stated in the assessment where relevant. Assessment is based on the following definitions:

- Beneficial effects contribute to the landscape and visual resource through the enhancement of desirable characteristics or the introduction of new, beneficial attributes. The removal of undesirable existing elements or characteristics can also be beneficial, as can their replacement with more appropriate components.
- Neutral effects occur where the development fits with the existing landscape character or visual amenity. The development neither contributes to or detracts from the landscape and visual resource and can be accommodated with neither beneficial or adverse effects, or where the effects are so limited that the change is hardly noticeable.
- Adverse effects are those that detract from the landscape character or quality of visual attributes experienced, through the introduction of elements that contrast, in a detrimental way, with the existing characteristics of the landscape and visual resource, or through the removal of elements that are key in its characterisation.

1.8 Residential Visual Amenity Assessment

1.8.1 Residential amenity is a planning matter that involves a wide number of effects and benefits, of which residential visual amenity is just one component. The Residential Visual Amenity Assessment (RVAA) is limited to the consideration of visual effects on residential amenity and the methodology accords with the advice in GLVIA 3, the Landscape Institute's *Residential Visual Amenity Assessment: Technical Guidance Note*, 2019.

1.8.2 Planning law contains a widely understood principle that the outlook or view from a private property is a private interest and not therefore protected by the UK planning system. However, the planning system also recognises situations where the effects on residential visual amenity are considered as a matter of public interest.

1.8.3 As a consequence, the visual assessment methodology provides for a much more detailed assessment of the closest residential properties. This allows the assessor and determining authority to make a judgement as to whether the residents at these properties would be likely to sustain unsatisfactory living conditions which it would not be in the public interest to create. Reviews of decisions demonstrate that the greatest visual effects or changes to the views available from a residential property and its curtilage are not the decisive consideration, rather it is the residential amenity (and, in this case, residential visual amenity) that is determinate.

1.8.4 The methodology for assessing the visual effects on views from residential properties is therefore different from the assessment of other visual receptors and allows for two stages of assessment as follows:

- Stage 1: Undertake a visual assessment to identify the level of effects; and
- Stage 2: Undertake a Residential Visual Amenity Assessment (RVAA).

1.8.5 A residential property, for the purposes of environmental impact assessment, should be one that was designed and built/converted for that purpose and at the time of the assessment remains in a habitable condition, is of a safe construction, is wind and watertight with appropriate vehicle access, and has services (drinking water, sanitation, and power supply). Other buildings such as barns/outbuildings, garages, huts, and derelict properties should generally be excluded from the assessment unless they form part of the curtilage of an existing residence.

1.8.6 The assessment of residential properties or clusters of residential properties has been limited to those which appear on the Ordnance Survey 1:25,000 scale map and any known recently built dwellings. Planning permissions and conversions have not been included.

1.8.7 Whilst most of the properties can be viewed at close range from public roads or footpaths, or have otherwise been visited, some of these properties are accessed via private or gated roads. Due to these access limitations, these properties have been assessed from the nearest public road or footpath which may be at greater distance from the property. Where this is the case, the assessment should be regarded as a best estimate of the likely visual effects.

Stage 1: Visual Assessment

1.8.8 A visual assessment is undertaken to identify those properties where the greatest visual effect on a view from the property is likely to occur. The methodology for this is set out above.

1.8.9 The sensitivity of individual residential receptors has been assessed as 'High' in each case due to the high susceptibility of residents in accordance with GLVIA 3, paragraph 6.33. The value of the view is also likely to be regarded as high by the residents themselves, but the views in this area are not nationally or locally designated for their scenic value and accord a medium value in this respect.

Stage 2: Residential Visual Amenity Assessment

1.8.10 The second stage is to consider the residential visual amenity and whether, in terms of the wider public interest, the visual effects would result in unsatisfactory living conditions, leading to a property being regarded, objectively, as an unattractive (as opposed to a less attractive) place in which to live. Relevant information considered as part of the assessment may include, but is not limited to the following:

- Scale of the Project:
  - Number of components visible;
  - The horizontal and vertical extent or Field of View (FOV) of the visible components; and
  - Separation distance (closest and furthest visible components).
- Description of Property, as far as this can be ascertained:
  - Orientation and size of property and whether views from the property towards the Proposed Development would be direct or oblique;
  - Location of principal rooms and main living areas such as living/dining rooms, kitchens and conservatories, as opposed to upstairs rooms, working areas such as farm buildings and utility areas;
  - Location of principal garden areas which may include patios and seating areas as opposed to less well used areas such as paddocks or garages; and

- The effects of any screening by landform, vegetation or nearby built development.

- Location and Context:
  - The aspect of the property in terms of the overall use and relationship to the garden areas and surrounding landscape;
  - The principal direction of main views and visual amenity; and
  - The context and nature of any intervening structures e.g. other existing developments, farm buildings or forestry.

1.6.1 The assessment takes account of the likely views from the ground floors of properties and main garden areas but excludes upper floors and other non-residential land that may relate to the property. These areas cannot usually be assessed from public areas unless they have been subject to further on-site assessment with the resident's permission.

1.9 Glint and Glare

1.9.1 The Department for Communities and Local Government's guidance '*Planning Practice Guidance for Renewable and Low Carbon Energy*' (March 2014) notes that "*particular factors a local planning authority will need to consider include [inter alia] the effect on landscape of glint and glare*".

1.9.2 Glint and glare are defined as follows[1]:

- "*Glint (specular reflection) may be produced as a direct reflection of the sun from the development.*
- *Glare (diffuse reflection) is a continuous source of brightness in scattered lightwaves. Glare is significantly less intense than glint*."

1.9.3 A detailed Glint and Glare Assessment has been undertaken for the Project (document reference 43122-WOOD-ZZ-XX-RP-OP-0001_S0_P01.1).

1.10 Production of ZTVs and Visualisations

1.10.1 ZTVs and visualisations are graphical images produced to assist and illustrate the LVIA. The methodology used for viewpoint photography, ZTVs and photomontages accords primarily with the Landscape Institute Technical Guidance Note on Visual Representation of Development Proposals (2019) and with the NatureScot guidance Visual Representation of Wind Farms, Version 2.2, February 2017.

Methodology for Production of ZTVs

1.10.2 The ZTVs are calculated using Resoft Wind Farm software. This software creates a 3D computer model of the existing landscape and the Project using digital terrain data as follows:

- Ordnance Survey Terrain 50: Used to produce the main or standard ZTV plot and wirelines, these tiles provide a digital record of the existing landform of Great Britain, or Digital Terrain Model (DTM) at 10m elevation intervals based on 50m grid squares and models representing the specified geometry and position of the Project. The computer model includes the entire

[1] The Development of Large Scale (>50kw) Solar PV Arrays in Cornwall', Cornwall Council, March 2012

LVIA Study Area and takes account of the effects caused by atmospheric refraction and the Earth's curvature; and

- Ordnance Survey Terrain 5: Used to produce a more detailed ZTV plot or wireline for limited areas, often used where there are small undulations or crags within the landscape. These tiles provide a digital record of the existing landform of Great Britain based on 5m grid squares and models.

1.10.3 The resulting ZTV plots are overlaid on Ordnance Survey mapping at an appropriate scale and presented as figures using desktop publishing/graphic design software.

Methodology for Baseline Photography

1.10.4 Once a view has been selected, the location is visited, confirmed, and assessed with the aid of a wireline or similar visualisation in the field. The viewpoint location is micro-sited to avoid as far as reasonable foreground clutter and photographed during fair weather and light conditions. A photographic record is taken to record the view and the details of the viewpoint location and associated data are recorded to assist in the production of visualisations and to validate their accuracy.

1.10.5 The following photographic information is recorded:

- Date, time, weather conditions and visual range.
- GPS recorded 12 figure grid reference accurate to ~5-10 m.
- GPS recorded Above Ordnance Datum (AOD) height data.
- The focal length of lens is confirmed.
- Horizontal field of view (in degrees).
- Bearing to Target Site (Project).

1.10.6 All photographs included in this assessment were recorded with a digital SLR camera set to produce photographs equivalent to that of a manual 35mm SLR camera with a fixed 50mm or 75mm focal length lens as required.

1.10.7 Whilst no two-dimensional image can fully represent the real viewing experience, the visualisation aims to provide a realistic representation of the Project, based on current information and photomontage methodology.

Weather Conditions

1.10.8 GLVIA3 para 8.22 state – *'In preparing photomontages, weather conditions shown in the photographs should (with justification provided for the choice) be either:*

- *representative of those generally prevailing in the area; or*
- *taken in good visibility, seeking to represent a maximum visibility scenario when the development may be highly visible'*.

1.10.9 In preparing photomontages for the LVA, photographs will be taken in favourable weather conditions. Weather conditions shown in the photographs for all viewpoints have, where possible, will be taken during periods of 'very good' or 'excellent' visibility conditions, seeking to represent a maximum visibility scenario when the developments may be highly visible.

Methodology for Production of Visualisations

1.10.10 A photomontage is a visualisation which superimposes an image of a proposed development upon a photograph or series of photographs. Photomontage is a widespread and popular visualisation technique, which allows changes in views and visual amenity to be illustrated and assessed, within known views of the 'real' landscape.

1.10.11 To create the baseline panorama, the frames are individually cylindrically projected and then digitally joined to create a fully cylindrically projected panorama using Adobe Photoshop or PTGui software. This process avoids the wide-angle effect that would result should these frames be arranged in a perspective projection, whereby the image is not faceted to allow for the cylindrical nature of the full 360° view but appears essentially as a flat plane. Tonal alterations are made using Adobe software to create an even range of tones across the photographs once joined.

1.10.12 The photographs are also joined to create planar projection panoramas using PTGui software. These are used in the creation of the 90° field of view (FoV) photomontages.

1.10.13 Visualisations that illustrate the Project, set within a computer-generated image of the landform, will be used in the assessment to predict its theoretical appearance. This will be produced with a combination of Resoft WindFarm and 3D AutoCAD and will be based on a terrain model with a 5m data grid.

1.10.14 Rendering of the Project in the photomontages is as photorealistic as possible to the conditions shown in each viewpoint photograph. There is some variation in the appearance and visibility between the viewpoints, as they are rendered to suit the conditions shown in each of the different viewpoint photographs which have some unavoidable degree of variation in terms of lighting and weather conditions. The key requirement is that the Project will be rendered with sufficient contrast against the skyline backdrop to illustrate its maximum visibility scenario in each image. Photomontages will be prepared to depict how the Project would appear in excellent visibility conditions to illustrate the worst-case. The full suite of viewpoint photomontages should be viewed to gain an impression of the likely visual effects of the Project.

1.10.15 Visualisations will be produced for the agreed viewpoints identified in the LVA and photomontages will aim to provide a photorealistic image of the appearance of the Project. 3D model representations are combined with the baseline view photographs to create a photorealistic rendered photomontage image of the development.

1.10.16 The baseline photographs shown for each viewpoint cover a 90° FoV. These are cylindrically projected images and should be viewed flat at a comfortable arm's length.

1.10.17 Visualisations of the Project will show, from each viewpoint, the existing baseline panorama and an annotated panorama or photomontage.

1.10.18 The completed set of visualisations and accompanying data are then presented as figures using desktop publishing/graphic design software.

Limitations of Visualisations

1.10.19 The photomontage visualisations used in the LVIA are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs.

1.10.20 The photomontage visualisations of any development proposal have a number of limitations when using them to form a judgement on visual effect. These include:

- A visualisation can never show exactly what a development will look like in reality due to differences in lighting, weather, seasonal conditions, etc., as well as the resolution of the image;
- The images provided give a reasonable impression of the scale and the distance to the Project but can never be 100% accurate to the as constructed effect;
- A static image cannot convey movement such as the movement of water or the reflection from the sun;
- The viewpoints illustrated are representative of views in the area but cannot represent visibility at all locations;
- To form the best impression of the effects, these images are best viewed at the viewpoint location shown;
- The visualisations must be printed and viewed at the correct size as indicated on the figures;
- Images should be held flat at a comfortable arm's length. If viewing these images on a wall or board at an exhibition, stand at arm's length from the image presented to gain the best impression; and
- It is preferable to view printed images rather than view images on screen. Images on screen should be viewed using a normal PC screen with the image enlarged to the full screen height to give a realistic impression.

Printing of Maps and Visualisations

1.8.1 All electronic visualisations and maps should be printed out and viewed at the correct scale as noted on the document.

1.11 Glossary of Terms and Abbreviations

Term/abbreviation	Definition
AOD	Above Ordnance Datum
AoV	Angle of View
Cumulative effects	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments, taken together' (SNH, 2012)
Cumulative landscape effects	Effects that 'can impact on either the physical fabric or character of the landscape, or any special values attached to it' (SNH, 2012)
Cumulative visual effects: In combination In succession Sequentially	Effects that can be caused by combined visibility, which 'occurs where the observer is able to see two or more developments from one viewpoint' and/or sequential effects which 'occur when the observer has to move to another viewpoint to see different developments' (SNH 2012) In combination: • Where two or more developments are or would be within the observer's arc of vision at the same time without moving his/her head (GLVIA3, 2013 Table 7.1). In succession: • Where the observer has to turn his/her head to see the various developments – actual and visualised (GLVIA3, 2013 Table 7.1). Sequential cumulative effect. • Occurs where the observer has to move to another viewpoint to see the same or different developments. Sequential effects may be assessed for travel along regularly used routes such as major roads or popular paths (GLVIA3, 2013 Table 7.1).
Development*	Any proposal that results in change to the landscape and/or visual environment.
Degree of change	A combination of the scale extent and duration of an effect also defined as 'magnitude'.
Designated Landscape*	Areas of landscape identified as being of importance at international, national or local levels, either defined by statue or identified in development plans or other documents.
Elements*	Individual parts which make up the landscape, such as, for example, trees, hedges and buildings.
Enhancement*	Proposals that seek to improve the landscape resource of the site and its wider setting beyond its baseline condition.
Environmental fit	The relationship of a development to identified environmental opportunities and constraints in its setting.
Feature*	Particularly prominent or eye-catching elements in the landscape such as tree clumps, church towers or wooded skylines OR a particular aspect of the project proposal.
FoV	Field of View – the horizontal angle of the view illustrated in a visualisation.
Geographical Information System (GIS)	A system that captures, stores, analyses, manages and presents data linked to location. It links spatial information to a digital database.
Glint	Glint (specular reflection) may be produced as a direct reflection of the sun from the development.
Glare	Glare (diffuse reflection) is a continuous source of brightness in scattered lightwaves. Glare is significantly less intense than glint.

Term/abbreviation	Definition
GLVIA 3	Guidelines for Landscape and Visual Impact Assessment, Third Edition, published jointly by the Landscape Institute and Institute of Environmental Management and Assessment, 2013.
Heritage	The historic environment and especially valued assets and qualities such as historic buildings and cultural traditions.
Historic Landscape Characterisation (HLC) and Historic Land-use Assessment (HLA)	Historic characterisation is the identification and interpretation of the historic dimension of the present-day landscape or townscape within a given area. HLC is the term used in England and Wales, HLA is the term used in Scotland.
Indirect effects*	Effects that result indirectly from the Proposed Development as a consequence of the direct effects, often occurring away from the site, or as a result of a sequence of interrelationships or a complex pathway. They may be separated by distance or in time from the source of the effects. Also used to describe indirect landscape effects concerning perceptual characteristics and qualities of the landscape and indirect visual effects in relation to issues such as 'setting'.
Iterative design process	The process by which project design is amended and improved by successive stages of refinement which respond to growing understanding of environmental issues.
Key characteristics	Those combinations of elements which are particularly important to the current character of the landscape and help to give an area its particularly distinctive sense of place.
Land cover	The surface cover of the land; usually expressed in terms of vegetation cover or lack of it. Related to but not the same as land use.
Landscape and Visual Assessment (LVA)	A tool used to identify and assess the potential effects of change resulting from development both on the landscape as an environmental resource, and on people's views and visual amenity.
Landscape Character Area (LCA)*	These are single unique areas which are the discrete geographical areas of a particular landscape type.
Landscape Character Assessment	The process of identifying and describing variation in the character of the landscape and using this information to assist in managing change in the landscape. It seeks to identify and explain the unique combination of elements and features that make landscapes distinctive. The process results in the production of a Landscape Character Assessment.
Landscape Character Types (LCTs)*	These are distinct types of landscapes that are usually homogenous in character. They are generic in nature in that they may occur in different areas in different parts of the country, but wherever they occur they share broadly similar combinations of geology, topography, drainage patterns, vegetation and historical land use and settlement pattern, and perceptual and aesthetic attributes. (Topic Paper 6, Countryside Agency and SNH 2004)
Landscape capacity	The ability of a landscape to accommodate different amounts of change or development of a specific type. Capacity reflects the landscape's sensitivity to the type of change, and the value attached to the landscape, and is therefore dependent on judgements about the desirability of retaining landscape characteristics and the acceptability of their loss. (http://www.snh.gov.uk/protecting-scotlands-nature/looking-after-landscapes/landscape-resource-library/glossary-of-terms/).
Landscape character*	A distinct, recognisable and consistent pattern of elements in the landscape that makes one landscape different from another, rather than better or worse.
Landscape classification	A process of sorting the landscape into different types using selected criteria but without attaching relative values to different sorts of landscape.
Landscape constraints	Components of the landscape resource such as views or mature trees recognised as constraints to development. Often associated with landscape opportunities.
Landscape effects*	Effects on the landscape as a resource in its own right.

Term/abbreviation	Definition
	An assessment of landscape effects deals with the effects of change and development on landscape as a resource. The concern here is with how the proposal will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character. (GLVIA3 2013, Para 5.1).
Landscape fit	The relationship of a development to identified landscape opportunities and constraints in its setting.
Landscape patterns	Spatial distributions of landscape elements combining to form patterns, which may be distinctive, recognisable and describable e.g. hedgerows and stream patterns.
Landscape quality (condition)*	A measure of the physical state of the landscape. It may include the extent to which typical character is represented in individual areas, the intactness of the landscape and the condition of individual elements.
Landscape qualities	A term used to describe the aesthetic or perceptual and intangible characteristics of the landscape such as scenic quality, tranquillity, sense of wildness or remoteness. Cultural and artistic references may also be described here.
Landscape receptors *	Defined aspects of the landscape resource that have the potential to be affected by a proposal
Landscape resource	The combination of elements that contribute to landscape context, character, and value.
Landscape sensitivity	The sensitivity of the landscape to a particular development considers the susceptibility of the landscape and its value.
Landscape strategy	The overall vision and objectives for what the landscape should be like in the future, and what is thought to be desirable for a particular landscape type or area as a whole; usually expressed in formally adopted plans and programmes or related documents.
Landscape value*	The relative value that is attached to different landscapes by society. A landscape may be valued by different stakeholders for a whole variety of reasons.
Level of effect	Determined through the combination of sensitivity of the receptor and the proposed magnitude of change brought about by the development.
Magnitude (of effect)*	A term that combines judgements about the size and scale of the effect, the extent of the area over which it occurs, whether it is reversible or irreversible and whether it is short term or long term in duration'.
Mitigation	Measures which are proposed to prevent, reduce and where possible offset any material adverse effects (or to avoid, reduce and if possible remedy identified effects. (GLVIA3, 2013 Para 3.37).
NSA	National Scenic Area
Perception	Combines the sensory (that we receive through our senses) with the cognitive (our knowledge and understanding gained from many sources and experiences).
Perceptual Aspects	A landscape may be valued for its perceptual qualities, notably wildness and/or tranquillity. (GLVIA3, 2013 Box 5.1)
Photomontage*	A visualisation which superimposes an image of the Proposed Development upon a photograph or series of photographs.
Beneficial or Adverse Types of Landscape Effect	The landscape effects may be beneficial, neutral, or adverse. In landscape terms – a beneficial effect would require development to add to the landscape quality and character of an area. Neutral landscape effects would include low or negligible changes that may be considered as part of the 'normal' landscape processes such as maintenance or harvesting activities. An adverse effect may include the loss of landscape elements such as mature trees and hedgerows as part of construction leading to a reduction in the landscape quality and character of an area.

Term/abbreviation	Definition
Beneficial or Adverse Types of Visual Effect	The visual effects may be beneficial, neutral, or adverse. In visual terms – beneficial or adverse effects are less easy to define or quantify and require a subjective consideration of a number of factors affecting the view, which may be beneficial, neutral, or adverse. This assessment has considered factors such as the visual composition of the landscape in the view together with the design and composition, which may or may not be reasonably, accommodated within the scale and character of the landscape as perceived from the receptor location.
Probability of Effect	The probability of a landscape and visual effect occurring as a result of the Proposed Development should be regarded as certain, subject to the stated project design and the continuance of the existing, baseline landscape resource, including known changes such as other permitted development.
Rarity	The presence of rare elements or features in the landscape or the presence of a rare Landscape Character Type. (GLVIA3 2013, Box 5.1)
Receptor	Physical landscape resource, special interest, or viewer group that will experience an effect.
Recreation Value	Evidence that the landscape is valued for recreational activity where experience of the landscape is important. (GLVIA3 2013, Box 5.1)
Representativeness*	Whether the landscape contains a particular character and/or features or elements which are considered particularly important examples.
Residual effects	Potential environmental effects, remaining after mitigation.
Scale Indicators	Landscape elements and features of a known or recognisable scale such as houses, trees, and vehicles that may be compared to other objects, where the scale of height is less familiar, to indicate their true scale.
Scenic quality	Depends upon perception and reflects the particular combination and pattern of elements in the landscape, its aesthetic qualities, its more intangible sense of place or 'genius loci' and other more intangible qualities. (GLVIA3 2013, Box 5.1)
Sense of Place (genius loci)	The essential character and spirit of an area: 'genius loci' literally means 'spirit of the place'.
Sensitivity*	A term applied to specific receptors, combining judgements of the susceptibility of the receptor to the specific type of change or development proposed and the value associated to that receptor.
SNH	Scottish Natural Heritage
Susceptibility*	The ability of a defined landscape or visual receptor to accommodate the specific Proposed Development without undue negative consequences.
Sustainability*	The principle that the environment should be protected in such a condition and to such a degree that ensures new development meets the needs of the present without compromising the ability of future generations to meet their own needs.
Temporary or permanent effects	Effects may be considered as temporary or permanent.
Time depth	Historical layering – the idea of landscape as a 'palimpsest', a much written-over asset of landscape.
Townscape	The character and composition of the built environment including the buildings and the relationships between them, the different types of urban open space, including green spaces, and the relationship between buildings and open spaces.
Type or Nature of effect	Whether an effect is direct or indirect, temporary or permanent, positive (beneficial), neutral or negative (adverse) or cumulative.

Term/abbreviation	Definition
Viewpoints	Selected for illustration of the visual effects fall broadly into three groups: **Representative Viewpoints:** selected to represent the experience of different types of visual receptor, where larger numbers of viewpoints cannot all be included individually and where the material effects are unlikely to differ – for example certain points may be chosen to represent the view of users of particular public footpaths and bridleways. **Specific Viewpoints:** chosen because they are key and sometimes promoted viewpoints within the landscape, including for example specific local visitor attractions, such as landscapes with statutory landscape designations or viewpoints with particular cultural landscape associations. **Illustrative Viewpoints:** chosen specifically to demonstrate a particular effect or specific issues, which might, for example, be the restricted visibility at certain locations. (GLVIA3 2013, Para 6.19)
Visual amenity	The overall views and surroundings, which provide a visual setting or backdrop to the activities of people living, working, recreating, visiting or travelling through an area.
Visual effect*	Effects on specific views and on the general visual amenity experienced by people.
Visual Receptors*	Individuals and/or defined groups of people who have the potential to be affected by a proposal.
Visual sensitivity	The sensitivity of visual receptors such as residents, relative to their location and context, to visual change proposed by development.
Visualisation	Computer visualisation, photomontage, or other technique to illustrate the appearance of the development from a known location.
Wireline	A computer-generated line drawing of the DTM (digital terrain model) and the Project from a known location.
Zone of Theoretical Visibility (ZTV)*	A map, usually digitally produced, showing areas of land within which, a development is theoretical visible.

* As per the definitions given in GLVIA3